Arizona Public Water System PFAS Toolkit

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
December 2022
azdeq.gov

ADEQ Arizona Department of Environmental Quality

Publication Number: EQR-22-20

Introduction

In 2022, the U.S. Environmental Protection Agency (EPA) established new lifetime drinking water health advisories for per- and polyfluorinated alkyl substances (PFAS) contaminants that can cause human health effects and are known or anticipated to occur in drinking water. While EPA's PFAS health advisories are non-enforceable and non-regulatory, EPA is expected to propose safe drinking water standards for PFAS. In anticipation of new federal regulations, the Arizona Department of Environmental Quality (ADEQ) compiled resources regarding funding, sampling, customer communication, and potential PFAS treatment options to assist public water systems facing PFAS challenges.

What are PFAS?

PFAS are a group of man-made chemicals with fire-retardant properties that have been manufactured and used by a variety of industries since the 1940s. PFAS have been widely used because of their unique physical properties, such as resistance to high and low temperatures, resistance to degradation and nonstick characteristics.

Where do PFAS come from?
(source: epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas)

The most common sources of PFAS contaminants in drinking water include:

- Fire extinguishing foam — in aqueous film-forming foams used to extinguish flammable liquid-based fire
- Landfills, disposal sites, and hazardous waste sites
- Biosolids applied to agricultural land
- Manufacturing processes or chemical production facilities that produce or use PFAS

What are the PFAS Health Advisory Levels (HALs)?

Table 1 – EPA HALs		
Chemical	**Health Advisory Level parts per trillion (ppt)**	**Minimum Reporting Level (ppt)**
PFOA	0.004 (interim)	4
PFOS	0.02 (interim)	4
GenX Chemicals	10 (final)	5
PFBS	2,000 (final)	3

Test Methods for PFAS Identification

There are two EPA test methods, 533 and 537.1, used for detecting PFAS in drinking water. Method 533 analyzes for 25 PFAS compounds and includes more short chain PFAS compounds and Method 537.1 analyzes for 18 PFAS compounds. When testing, use both methods to be consistent with EPA guidance.

Arizona certified laboratories

For current information about certified laboratories in Arizona, please visit the Arizona Department of Health Services (ADHS) website: ells-lab-search.azdhs.gov/ArizonaCertifiedLabs/LabSearchContentPage. Analysis costs vary by lab. Please contact labs for costs and to arrange sample bottle pick up.

Where to sample

ADEQ recommends that you collect PFAS samples at the Entry Point to the Distribution System (EPDS) unless treatment is present. A treatment system could mask the presence of PFAS in drinking water. If a treatment system exists, take the sample at the source or well head. If PFAS is detected at the source well, then take steps to optimize the existing treatment system to address PFAS.

What to Do If You Have PFAS in Your Water

If ADEQ tests your water for PFAS during any of our proactive statewide sampling events, ADEQ will provide you with our validated data.

If you conduct your own PFAS sampling and your results show the presence of PFOA, PFOS, GenX chemicals or PFBS in drinking water at levels higher than EPA's HALs, then please notify ADEQ's Safe Drinking Water Section and electronically share your data with us at DW_PFAS@azdeq.gov.

If any PFAS sample results for your water system show the presence of PFOA, PFOS, GenX chemicals or PFBS in drinking water at levels higher than EPA's HALs, then:

Inform your customers

Notify your customers as soon as possible using the following EPA June 2022 resources for public water systems and communities:

- EPA Drinking Water Health Advisories for PFAS Fact Sheet for Public Water Systems (PFOA, PFOS, GenX Chemicals and PFBS) epa.gov/system/files/documents/2022-06/drinking-water-ha-pfas-factsheet-water-system.pdf

- EPA Drinking Water Health Advisories for PFAS Fact Sheet for Communities epa.gov/system/files/documents/2022-06/drinking-water-ha-pfas-factsheet-communities.pdf

Note: If your water system is required to prepare and distribute an annual Consumer Confidence Report (CCR), then also be sure to include information about any PFAS detected in your CCR.

Limit exposure

There are different ways to reduce risks from PFAS. Both treatment and non-treatment options are shared in the Methods of Mitigation section of this toolkit.

Assess contamination

EPA recommends you undertake additional sampling to assess the concentration and localized source of contamination to inform next steps.

Funding

State funding sources: Drinking Water State Revolving Fund (DWSRF)

The Water Infrastructure Finance Authority of Arizona (WIFA) has several options available for eligible public water systems needing funding to address PFAS contamination. You can start the process to seek funding by completing and submitting a Project Priority List (PPL) Application to WIFA using this link: applicant.azwifa.gov. By submitting a PPL application, WIFA can assign staff to help determine eligibility and financial benefits available to meet the project needs. If you have any questions before or during the PPL process, please call 602-364-1310 for assistance.

Federal funding sources: Water Infrastructure Improvements for the Nation (WIIN) Grant

EPA has announced $1 billion in grant funding to help communities address PFAS contamination (and other emerging contaminants) in small or disadvantaged communities. Water systems are encouraged to review the grant eligibility requirements at: epa.gov/dwsrf.

If you believe you may qualify and are interested in this emerging contaminant grant funding, please contact your ADEQ compliance assistance coordinator to submit a request for a Technical Assistance Referral: static.azdeq.gov/comp/dw/coordinator_contact_list.pdf.

Methods of Mitigation

Non-treatment options

In both the short- and long-term, alternatives to treatment can in some cases be more cost effective and require less maintenance.

Evaluate existing wells to take impacted wells offline or to develop a blending plan — For systems with multiple wells, determine which wells are impacted by PFAS and which are not. This will allow you to maximize usage of unimpacted wells, if your water meets all other water quality parameters. Since the HALs are so low, blending water from multiple wells may or may not be a viable option.

Consider consecutive connections or PWS consolidation — Purchase water from an adjacent, unimpacted water system or consider consolidation. Although alternative water sources may require transmission lines and adjustments to existing distribution systems, obtaining treated water from a nearby system may be the best source of alternative drinking water.

Install a new well — Before installing a new well, it's important to work with your hydrogeologist to assess the hydrogeology and the water quality of the area and potential well sites. The PFAS contaminant plume needs to be assessed to ensure the well is properly placed so that it will not be impacted now or in the future.

Treatment options

There are currently three treatment processes that can be effective for PFAS removal. The optimal choice between these technologies is a balance between many factors.

Activated carbon treatment — Activated carbon is commonly used to adsorb natural organic compounds, taste and odor compounds, and synthetic organic chemicals in drinking water treatment systems.

Ion exchange treatment — Ion exchange resins are like tiny powerful magnets that attract and hold the contaminated materials from passing through the water system. Negatively charged ions of PFAS are attracted to the positively charged anion resins. Point-of-Entry and Point-of-Use devices oftentimes contain both Activated Carbon and Ion Exchange cartridges.

Reverse osmosis — Reverse osmosis membranes remove contaminants by using pressure to force water molecules through a semipermeable membrane, separating water from contaminants. It can be used for both short and long chain PFAS chemicals. Membranes can foul due to other particles and contaminants in source water. Treated water may require corrosion control, as reverse osmosis can also remove minerals like calcium, sodium and magnesium and change pH.

Permitting

The installation or modification of a consecutive connection, treatment system or well requires permits for Approval to Construct (ATC) and Approval of Construction (AOC). For information about obtaining the required ADEQ permits, visit ADEQ's Drinking Water Engineering Review webpage at azdeq.gov/facilitiesreview.

Additional Resources and Links

- Interstate Technology and Regulatory Council (ITRC) PFAS: youtube.com/playlist?list=PL4BkJPBpegFGf41mTSSKvQ9_bAQ4gM27X
- EPA's PFAS website explains more about our understanding of the chemical group, provides EPA's PFAS Strategic Roadmap, actions the agency has taken to implement it, and provides other tools and resources related to addressing PFAS: epa.gov/pfas
- EPA's drinking water health advisories for PFOA, PFOS, PFBS and GenX Chemicals: epa.gov/sdwa/drinking-water-health-advisories-has
- Agency for Toxic Substances and Disease Registry's (ATSDR) Perfluorinated Chemicals and Your Health: atsdr.cdc.gov/pfas/index.html
- ADEQ PFAS resources: azdeq.gov/pfas-resources